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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/343,684	06/30/1999	ALICJA BORYSOWICZ	1029/182	8228

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EXAMINER

VINCENT, SEAN E

ART UNIT

PAPER NUMBER

1731

DATE MAILED: 11/26/2001

Please find below and/or attached an Office communication concerning this application or proceeding.

87-8

**Office Action Summary**

Application No.

09/343,684

Applicant(s)

BORYSOWICZ ET AL.

Examiner

Sean E Vincent

Art Unit

1731

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 10-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 10-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claims \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are objected to by the Examiner.
- 11) ☒ The proposed drawing correction filed on 29 August 2001 is: a) ☒ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. § 119**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

**Attachment(s)**

- 15) ☐ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_.
- 18) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Claim Rejections - 35 USC § 112***

1. Claims 10-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
2. Claim 10 recites the limitation "the actuators and control devices" the last line. There is insufficient antecedent basis for control devices in the claim.
3. Claim 14 is indefinite because it reads as though the laws of furnace operation were defined in one of three ways, but the learning phase described in the specification required the monitoring of actual furnace operation. The comma in line 4 after "predictive network" appears to be misplaced.

***Claim Rejections - 35 USC § 103***

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
5. Claims 10-14 and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aoki (US 5272621) in view of Victor et al (IEEE article).
6. Aoki teaches systems for controlling the melting of a glass batch in a glass melting furnace using fuzzy logic with fuzzy prediction. (see the figures, col. 4, line 22 to col. 7, line 55, col. 12, line 3 to col. 13, line 41). It is the position of the examiner that the claimed 'learning device' reads on the means for evaluating operator input disclosed by Aoki. In col. 13, lines 13-

22, glass pull and state information is described as being 'known input information' in addition to temperature inputs.

7. Aoki does not teach the inclusion of a video camera or image processing means. Victor et al teaches a computer vision system for acquiring and processing images of flames, combustion chamber walls and nonfused materials in the melting tank of a glass furnace (see entire article). Victor et al also teaches Bayesian and neural network classification means, means for controlling furnace bubblers, and learning means as well as using flame classification data in a feedback controller to operate the furnace. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate the image acquisition and processing system, the classification and learning means and the flame and bubbler control means of Victor et al into the apparatus of Aoki because Victor et al teaches that it would result in a fast control system implementation.

8. Claims 15 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aoki and Victor et al as applied to claim 12 above and further in view of Miller (US 4409012).

9. Aoki does not teach the inclusion of a video camera or image processing means. Victor et al does not teach image analysis of a plurality of batch parameters, only for "the presence on nonfused materials". Miller teaches a glass furnace in which a video camera is positioned to view the surface of the batch and melt mixture wherein the video signal is digitized and processed for monitoring the operation of the furnace bubblers (see figures; abstract; col. 1, lines 39-50; col. 2, lines 30-39 and lines 60-65; col. 3, lines 51-68; col. 4, lines 1-46; col. 5, lines 1-12; col. 7, lines 24-65). It would have been obvious to a person of ordinary skill in the art at the time

Art Unit: 1731

the invention was made to use the batch monitoring system of Miller within the apparatus of Aoki and Victor et al because Miller teaches that it was a more efficient monitoring means.

***Response to Arguments***

10. Applicant's arguments filed August 29, 2001 have been fully considered but they are not persuasive.

11. In response to the argument that Aoki does not teach multiple inputs and outputs, the examiner disagrees. It is important to note that the disclosure of Aoki is written to outline a generic control system first and then a preferred embodiment for glass furnace control second. As stated in applicant's arguments, the "embodiments of Figs. 7 and 8" show only a single input. Figs. 7 and 8, however, are used to demonstrate the difference between a process estimation connected in series or in parallel with a fuzzy PI controller respectively. These are really elements of a larger control system. Note that when the Aoki disclosure discusses the construction of a glass melting furnace, specific references are made to multiple thermocouples in different parts of the furnace (col. 12, lines 53-56). Surface state of the molten glass is specifically mentioned as a factor effecting thermal characteristics of the furnace (col. 12, lines 62-65). Multiple factors are used as inputs (col. 13, lines 17-22).

12. Several important teachings related to fuzzy control in a glass furnace can be found in US Patent no. 5,693,110 to Iwaihara et al. Since Iwaihara et al outlines a more comprehensive control system for glass furnaces, it more clearly illustrates how a glass furnace controller would require multiple inputs and outputs.

Art Unit: 1731

13. In response to the argument that Victor et al merely classifies flames, the examiner disagrees. Note the two bulleted items bridging pages 477 and 478 (“The system described can be useful in two ways:”) which clearly suggest using the classifier output or even some of the classifier input (the ‘features’ used to classify the flame) in a feedback control strategy.

Moreover, the third full paragraph in the second column of page 470 states, “The system described in this paper was designed not only to synthesize useful information for monitoring and diagnostic purposes but also to deliver this information in a way suitable to be integrated in the control system itself.” Victor et al, therefore, does not stop at flame classification.

Furthermore, Victor et al taught that its vision system could be used for other kinds of monitoring (see page 470, col. 2, first full paragraph).

14. In response to the argument that Miller is not applicable to the claimed subject matter, the argument is moot in view of the rewritten claims and the new grounds of rejection.

### *Conclusion*

15. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

16. A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

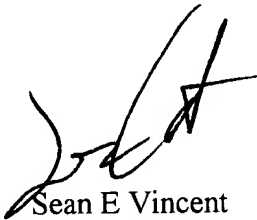
Art Unit: 1731

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sean E Vincent whose telephone number is 703-305-3607. The examiner can normally be reached on M - F (8:30 - 6:00) Second Monday Off.

18. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on 703-308-3837. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

19. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0651.



Sean E Vincent  
Primary Examiner  
Art Unit 1731

S Vincent  
November 14, 2001